figured, and which we are informed, in the above note, are male and female of *Cinosternon Pennsylvanicum*; the "young female," which I am accused of making a species, being in his own work considered a distinct genus from the *Cinosternon* or *Thyrosternon Pennsylvanicum*!

If any one will take the trouble to compare the figures in the two works, I think they will have little doubt that the synonyma will stand thus:—

1. *Kinosternon Pennsylvanicum*, junior, Gray, Cat. t. 20 C. f. 1, 2, = *Thyrosternon Pennsylvanicum*, Agassiz, p. 428; *Cinosternum Pennsylvanicum*, pl. 4. f. 7, 12, pl. 5. f. 16, 17.
2. *Kinosternon Hippocrepis*, junior, Gray, Cat. t. 20 C. f. 3, 4, = *Platythyra flavescens*, Ag. p. 430; *Cinosternum flavescens*, Ag. pl. 5. f. 12, 15.
3. *Kinosternon punctatum*, junior, Gray, Cat. t. 20 C. f. 5, 6, = *Thyrosternon Sonoriense*, Ag. 428; *Cinosternum Sonoriense*, Ag. pl. 5. f. 8, 11.

I do not think it necessary to take any notice of the other observations in this brief communication, but shall refer to them in the Appendix to my Catalogue, which is in the press.

BIBLIOGRAPHICAL NOTICE.

Contributions to the Natural History of the United States of America. By Louis Agassiz. Vols. I. and II. 4to. Boston: Little, Brown & Co. London: Trübner & Co. 1857.

The first two volumes of Agassiz's 'Contributions to American Zoology,' so long announced, and so anxiously expected by his friends on both sides of the Atlantic, have at length made their appearance. They contain, first, an essay on general classification, forming an introduction to the whole work; and secondly, the results of the author's investigations on the *Testudinata*, to which he has devoted much time and toil during the last few years. This is divided into two parts, the first containing a special account of the North American members of the group, and the second an extended and laborious treatise on their embryology. The first portion of this book is of a nature so generally interesting to all who take pleasure in studying the laws and objects of creation,—it is so fairly and beautifully written, and gives a view of the subject so much more complete and philosophical than anything of the sort yet attempted, that it cannot but be regretted that it should be obtainable only in conjunction with the bulky work on a special subject, and which is, moreover, to be

extended to twelve volumes, to which it is attached; and we venture to recommend its re-issue in a separate form.

In the first chapter of this introductory essay, Professor Agassiz enters at length into the fundamental relations of animals to one another and to the world in which they live. He insists that "classification rests upon too narrow a foundation, when it is chiefly based on structure." "Animals," he most truly observes, "are linked together as closely by their mode of development, by their relative standing in their respective classes, by the order in which they have made their appearance upon earth, by their geographical distribution, and generally by their connexion with the world in which they live, as by their anatomy. All these relations should, therefore, be fully expressed in a natural classification; and, though structure furnishes the most direct indication of some of these relations, always appreciable under every circumstance, other considerations should not be neglected which may complete our insight into the general plan of creation." Prof. Agassiz's views on the geographical distribution of animals, on the permanency of specific peculiarities, and on the parallelism between the geological succession of animals and the embryonic growth of their living representatives, are particularly worthy of notice. An ardent supporter of the theory of the permanency of species, he most emphatically repudiates the 'Vestigiarians' and their views, concluding with the proposition, that "Beings do not exist in consequence of the continued agency of physical causes, but have made their appearance upon earth by the immediate intervention of the Creator."

The second chapter treats of the leading groups of the existing system of animals, and gives us the author's views on 'types,' 'classes,' 'orders,' 'families,' 'genera,' and 'species.' Professor Agassiz repudiates as 'pedantic' all the other divisions and subdivisions so often employed in Natural History, such as subfamilies, subgenera, and the like. *Branches* or *types*, he says, are characterized by the plan of their structure, *classes* by the manner in which that plan is executed, *orders* by the degrees of complication of their structure, *families* by their form as far as determined by structure, *genera* by the details of the execution in special parts, and *species* by the "relations of individuals to one another and to the world in which they live, as well as by the proportions of their parts, their ornamentation, &c." Yet he allows that "there are other natural divisions which must be acknowledged in a natural zoological system, but these are not to be traced so uniformly as the former; they are in reality only limitations of the other kinds of divisions." As to species, Professor Agassiz rejects the generally-received notion, that sexual connexion resulting in fertile offspring is a trustworthy evidence of specific identity, and enters into this question at some length. As is well known, the Professor is an ardent advocate of the cause of the 'Polygenists' against the 'Monogenists' in their respective theories of the origin of the human race,—holding that man was created in nations, and distributed over the face of the

earth in geographical regions and provinces, like other created beings; and he takes this opportunity of introducing the very weighty remark, that he cannot conceive "how moral philosophers, who urge the unity of the origin of Man as one of the fundamental principles of their religion, can at the same time justify the necessity which it involves of a sexual intercourse between the nearest blood-relations of that assumed first and unique human family." We may say, however, that though he enlarges much upon the characters of species, and goes fully into the methods of discovering them, we wait still for a perfect solution of the celebrated '*crux*' "*what IS a species?*," to which we find no satisfactory answer here given. There is, however, very much that is worthy of serious attention in this chapter concerning the true method of investigation; and were these or similar rules (if these rules are not right) established and followed, there would be less cause for the well-grounded complaint, that in almost every "characterization of genera, of families, of orders, of classes, of types," "characters of the same *kind* are introduced almost indiscriminately to distinguish all these groups."

The introductory essay concludes with a chapter on the principal systems of Zoology, in the first part of which Prof. Agassiz gives us his own views. Like other distinguished naturalists of the present day, he is disposed to return to the fourfold division of the great Cuvier, as modified by modern investigators, and considers the *Protozoa* [?] an unnatural combination of the most heterogeneous beings, "to be divided partly among plants and partly among animals, in the classes of Acephala, Worms and Crustacea." The RADIATES he divides into *Polypi*, *Acalephæ* and *Echinoderms*; the MOLLUSKS into *Acephala*, *Gasteropoda* and *Cephalopoda*; the ARTICULATA into Worms, Crustaceans and Insects. In the VERTEBRATES he maintains that the number and limits of the classes are not yet satisfactorily ascertained, but is inclined to separate them as follows into no less than *eight* (!) divisions:—

1. Myzontes (Myxinoids and Cyclostomes).
2. Fishes proper (Ctenoids and Cycloids).
3. Ganoids (Cœlacanths, Acipenseroids, Sauroids, and doubtful, Siluroids, Plectognaths and Leptobranches).
4. Selachians (Chimæræ, Galeodes and Batides).
5. Amphibians (Cæciliæ, Ichthyodi and Anura).
6. Reptiles (Serpentes, Saurii, Rhizodontes and Testudinata).
7. Birds (Natatores, Grallæ, Rasores and Insessores).
8. Mammals (Marsupialia, Herbivora and Carnivora).

It would not be difficult to pick holes in this portion of Professor Agassiz's arrangement, particularly as relates to the two latter classes, and the author himself submits his views "rather as suggestions for future researches than as matured results."

The second part of the work—"On North American Testudinata"

—is also highly worthy of the attention of naturalists in general, and affords Prof. Agassiz "a welcome opportunity of testing the principles of classification discussed in the first part."

Those who have paid special attention to the difficult order of Reptilia of which it treats, will be best able to judge whether the author has so carried out his principles of classification as to produce a more perfect arrangement of these animals than former writers on the same subject. But there can be no question as to the great additions made by this treatise to our knowledge of this class of beings, particularly as regards their embryonic condition and their progressive growth. The territory of the United States of America, much better provided with Reptiles and Amphibians of every Order than Europe, is particularly fortunate in the case of the *Testudinata*. In place of the few straggling species of Land-Turtles which appear in the southern parts of Europe, more than twenty land and fresh-water Tortoises have long since been recognized as inhabiting different parts of the North American continent; and, if Professor Agassiz's views are correct, their number must now be reckoned at thirty-seven —all occurring within the limits of the United States. Many of these species are very abundant, and several of them are a favourite article of diet in America. The 'Salt-water Terrapin,' *Malacoclemmys palustris* (which, we beg to suggest, might have been very appropriately named '*Euchylo-clemmys*'), is pre-eminent among these, and considered by many to be superior in flavour to true '*turtle*.' Those who have been so fortunate as to assist at one of the evening meetings of the Savants of Philadelphia called by the name of 'Whister-parties,' cannot fail to recollect the 'call' which there always is for the dish in which the limbs of this little animal are served up under the denomination of 'Stewed Terrapins.'

The abundance of these *Testudinata* in the United States, and the kindness of correspondents in different parts of the Union, enabled Professor Agassiz to make a very large collection of living examples, and gave him a great advantage over former observers in Europe, who have been obliged to draw their characters from dead specimens. "The number of living Turtles I have had an opportunity of examining and preserving for months and years in my yard," says the Professor, "will appear incredible to European naturalists: I have had them and their eggs by thousands;" and, again, "There are many species of which I have examined many hundreds of specimens." It is evident, therefore, that his advantages have been great; and the views of an observer so distinguished, and with such opportunities, must be entitled to no small respect.

Professor Agassiz divides the *Testudinata* into the two natural suborders, for which he adopts the names *Chelonii* and *Amydæ*, proposed by Oppel as long ago as 1811. Of the first, containing the Sea-Turtles, he makes two families, *Sphargididæ* and *Chelonioidæ*, according to a division which has been already recognized, if not generally employed. The second suborder, which contains the Land- and Freshwater-Turtles, he separates into seven families—*Triony-*

chidæ, Chelyoidæ, Hydraspididæ, Chelydroidæ, Cinosternidæ, Emydoidæ, and *Testudinina.*

After pointing out the distinctions between these groups, he enters at length into the characters and distribution of the species found in North America, which he makes about fifty in number. It is a remarkable fact, that of the Land and Freshwater division only one occurs on the Pacific slope of the continent (*Actinemys marmorata*), the so-called *Chrysemys oregonensis* being from the Upper Missouri, and not from Oregon.

A list of these animals, according to the generic and specific appellations adopted by Prof. Agassiz, we give below in a tabulated form, which will show at a glance the result of this part of his labours. With regard to the names employed, we have one or two observations to make. In respect to terms misspelt and wrongly derived, every thinking person must agree with Prof. Agassiz, whose well-known efforts to correct zoological nomenclature entitle him to especial attention on this subject. Far be it from us to defend such ungrammatical barbarisms as are involved in writing 'Trionycidæ' for 'Trionychidæ,' 'Kinosternon' for 'Cinosternon,' 'Malaclemys' for 'Malacoclemmys;' but we are not prepared to give up without protest the very convenient and now generally recognized practice of forming the names of families in *idæ* and subfamilies in *inæ*, which, though not strictly accurate, is an excellent *memoria technica*, and guides one at once to the rank of the division intended. Now that the divisions of organized beings are so numerous, some such scheme is absolutely requisite, to show whether a class, order, or family is intended by any particular designation. We may remark, also, that Professor Agassiz's arrangement would have been more intelligible to those who are engaged in working at this group, as well as more convenient for reference, if a short Synopsis of the American Testudinata, as now known, with scientific characters of the families, genera and species, and a more detailed list of synonyms, had been added. To one so well '*up*' in his subject as the author of this work, this would have given but little additional trouble. To those who are less favourably situated for acquiring a knowledge of these animals, it would have been of great service to enable them to see at a glance the reason of the many changes which Professor Agassiz has proposed in the arrangement and nomenclature of the families, genera and species.

In conclusion, we beg to congratulate Prof. Agassiz on his array of American subscribers, numbering some 2400 we believe,—an unheard-of amount of patronage to be bestowed on a purely scientific work, and which shows that the American people know how to appreciate a good man when they have got him. The European list presents a miserable contrast; and had it not been for the energy of Messrs. Trübner (who subscribe for 50 copies), this great work must have remained nearly unknown on this side of the Atlantic.

Table of North American Testudinata, according to the Arrangement of Prof. Agassiz.

a. SPHARGIDIDÆ.	I. Sphargis.....	1.	coriacea, ex Oceano Atlant.
b. CHELONIOIDÆ.	I. Chelonia	1.	mydas, ex Oceano Atlant.
		2.	virgata, ex Oceano Pacif.
	II. Eretmochelys..	1.	imbricata, ex Oceano Atlant.
		2.	squamata, ex Oceano Pacif.
	III. Thalassochelys	1.	caouana, ex Oceano Atlant.
c. TRIONYCHIDÆ.	I. Amyda	1.	mutica, ex Nov. Eb., Pennsylv., Ind. &c.
	II. Platypeltis.....	1.	ferox, ex Georg., Louisian. &c.
	III. Aspidonectes...	1.	spinifer, ex Stat. Bor., Or. et Occ.
		2.	asper, ex Louisiana.
		3.	nuchalis, ex Tennessee.
		4.	Emoryi, ex Texas.
d. CHELYDROIDÆ.	I. Gypochelys ...	1.	lacertina, ex Stat. Mer. Occ.
	II. Chelydra	1.	serpentina, ex Stat. Orient. et Occ.
e. CINOSTERNIDÆ. Subfam. *Ozothecoidæ.*	1. Goniochelys	1.	triquetra, ex Louisian.
		2.	minor, ex Georgia.
	2. Ozotheca ...	1.	odorata, ex Stat. Or. et Occ.
		2.	tristycha, ex Stat. Mer. Occ.
Subfam. *Cinosternoidæ.*	3. Thyrosternon	1.	pennsylvanicum, ex Stat. omn.
		2.	sonoriense, ex Sonora.
		3.	integrum, ex Mexico.
	4. Platythyra...	1.	flavescens, ex Texas.
f. EMYDOIDÆ. I. Subfam. *Nectemydoidæ.*	I. Ptychemys	1.	rugosa, ex Nov. Jers. et Virg.
		2.	concinna, ex Stat. Mer.
		3.	mobiliensis, ex Stat. Mer. et Texas.
		4.	hieroglyphica, ex Georgia.
		5.	decussata, ex Cuba.
	II. Trachemys ...	1.	scabra, ex Car. Bor. et Georgia.
		2.	Troostii, ex Stat. Occ.
		3.	elegans, ex fl. Miss. sup. et Texas.
		4.	rugosa, ex Cuba.
	III. Graptemys.....	1.	geographica, ex Stat. Or. et Mer.
		2.	Lesueuri, ex Stat. Occ.
	IV. Malacoclemmys	1.	palustris, ex Stat. Atlant.
	V. Chrysemys.....	1.	picta, ex Stat. Or. et med.
		2.	marginata, ex Stat. Occ.
		3.	Belli, ex Illin. et fl. Miss.
		4.	oregonensis, ex fl. Miss. sup.
		5.	dorsalis, ex Stat. Mer.
II. Subfam. *Deirochelyoidæ.*	VI. Deirochelys...	1.	reticulata, ex Stat. Mer.
III. Subfam. *Euemydoidæ.*	VII. Emys	1.	meleagris, ex Stat. Bor. et Occ.
IV. Subfam. *Clemmydoidæ.*	VIII. Nanemys.....	1.	guttata, ex Stat. Or.
	IX. Calemys	1.	Muhlenbergii, ex Nov. Jers. et Pennsylv.
	X. Glyptemys ...	1.	insculpta, ex Stat. Bor. Or.
	XI. Actinemys ...	1.	marmorata, ex California.
V. Subfam. *Cistudinina.*	XII. Cistudo	1.	virginea, ex Stat. Bor. Or.
		2.	triunguis, ex Stat. Mer. Occ.
		3.	ornata, ex Stat. Bor. Occ.
		4.	major, ex Stat. Mer. Or.
g. TESTUDININA.	I. Xerobates.....	1.	carolinus, ex Car. et Texas.
		2.	Berlandieri, ex Tex. Mer. et Mex.